

REMARKS

In the aforementioned final Office Action, claims 1-9 were rejected under 35 U.S.C. §103(a) as being unpatentable over Tao (JP 4110259030) in view of Kobelco, ("Titanium Characteristics" <http://www.kobelco.do.jp/titan/e/feature.htm>.) Claims 1-9 and 20-25 were additionally or alternatively rejected under §103(a) as being unpatentable over Mordehai (U.S. patent No. 6,703,610) in view of Kobelco. By this communication, claims 2-4 have been cancelled, and claims 1, 5 and 20 have been amended to better clarify the invention. Claims 1, 5-9, 11, 12 and 20-25 are now pending. Reconsideration of the rejected claims is hereby respectfully requested in view of the foregoing amendments and the remarks set forth below.

Rejections Under 35 USC §103

1. Rejections Based On Tao In View of Kobelco

Claims 1-9 were rejected under 35 U.S.C. §103(a) as being unpatentable over Tao in view of Kobelco. Applicant traverses these rejections as applied to the amended claims for the following reasons.

Claim 1, as currently amended, recites a skimmer comprising a body having an orifice through which ions can pass, wherein the skimmer body is wholly fabricated from titanium metal. In rejecting claim 1 as previously presented, the Examiner argued that it would be obvious to select titanium as the metallic component of the Tao skimmer because titanium exhibits the desirable properties of high resistance to corrosion and heat, per Kobelco. Tao discloses a skimmer structure in which the skimmer is constructed from two distinct materials: a metallic part (7), made from a metallic material such as nickel, copper, aluminum, platinum or the like and a ceramic part (8), made from a ceramic material such as alumina, zirconia, magnesia or the like. The metallic and ceramic materials are separately optimized for different properties; the metallic material is selected to provide high thermal and electrical conductivity, while the ceramic material is selected to provide electrical insulation and high heat resistance.. Tao relies on the composite construction to enable suppression of secondary emission and the generation of a boundary layer, which are undesirable in a plasma mass spectrometer.

Assuming, arguendo, that it would have been obvious to combine the teachings of Tao and Kobelco, such a combination would still not meet the limitation set forth in claim 1 that the skimmer body is entirely fabricated from titanium metal. Instead, the combination of the two references would yield a composite skimmer body composed of a titanium part affixed to a ceramic part. Moreover, it would not be obvious to modify the Tao skimmer design to utilize a single material in place of the composite structure, since Tao teaches that the composite structure is essential to the objective of the invention, i.e., secondary emission/boundary layer suppression in a plasma mass spectrometer. Because neither of the references, either taken alone or individually, teaches or suggests the limitation recited in claim 1 of a skimmer body fabricated entirely from titanium, the §103(a) rejection based on these references should be withdrawn.

Claims 5-9 depend directly or indirectly from claim 1 and inherit all the limitations thereof and of any intervening claims, and are submitted to be patentable over Tao in view of Kobelco for at least the reasons advanced above in connection with Claim 1.

2. Rejections Based On Mordehai In View Of Kobelco

Claims 1-9 and 20-25 were rejected under §103(a) as being unpatentable over Mordehai in view of Kobelco. Applicant traverses these rejections as applied to the amended claims.

Mordehai teaches a skimmer for a mass spectrometer in which an underlying substrate is coated with an inorganic metallic nitride compound, such as titanium nitride. Purportedly, the application of the metallic nitride layer provides benefits of reduced reactivity (col. 5, lines 18-23 of Mordehai), greater resistance to charging (col. 5, lines 62-66), and enhanced scratch resistance (col. 6, lines 14-17). Notably, the Mordehai skimmer design, like that of Tao, is based on a composite skimmer body structure in which the skimmer body is fabricated from multiple materials in order to achieve certain performance objectives. For example, FIG. 4B and col. 5, lines 12-14 of Mordehai depict and describe a skimmer body composed of an innermost aluminum substrate layer (55) interposed between nickel layers (53), which in turn underlie titanium nitride layers (51).

Claim 1 is directed to a skimmer in which the skimmer body is wholly fabricated from titanium metal. This limitation is not taught or suggested by the Mordehai or Kobelco references. In the Office Action, the Examiner argues that Kobelco teaches that titanium metal

is used to fabricate electrodes out of titanium metal because of its high resistance to corrosion and heat, and that therefore it would have been obvious to modify the Mordehai skimmer such that the entire body of the skimmer comprises titanium metal. Applicant submits that this argument is erroneous for at least two reasons. First, as noted above, Mordehai discloses a skimmer that is constructed from multiple layers of different materials. Assuming that the teachings of Mordehai and Kobelco may be properly combined, such a combination would produce a skimmer of composite construction wherein one of the plural layers was made from titanium metal. Mordehai does not teach or suggest that its skimmer body may be entirely fabricated from a single metal, including titanium metal.

Second, Applicant submits that the combination of references is improper because Mordehai actually teaches away from the utilization of metals in the exposed surfaces of the skimmer due to their poor scratch-resistance relative to nitride compounds. As stated at col. 6, lines 14-17 of the Mordehai specification:

since nitride compounds are harder than most metals, coatings of the present invention resist scratching better than metals and alloys that also exhibit low electrical resistivity.

In view of the teaching set forth in Mordehai regarding the benefit of enhanced scratch-resistance achieved by utilization of nitride compounds in the skimmer body, one of ordinary skill in the art would not be motivated to substitute relatively soft titanium metal (having a hardness on the MOHS 1-10 scale of between 5 and 6) for the titanium nitride material preferred by Mordehai (having a significantly greater MOHS scale hardness of 9), because use of the titanium metal would not accomplish a key objective of the Mordehai invention.

In light of the above discussion, applicant submits that Claim 1 as amended is patentable over Mordehai in view of Kobelco, and withdrawal of the rejection §103(a) is therefore respectfully requested.

Claims 5-9, 11 and 12 depend directly or indirectly from claim 1 and inherit all the limitations thereof and of any intervening claims, and are submitted to be patentable over Mordehai in view of Kobelco for at least the reasons advanced above in connection with claim 1.

Claim 20, as amended, recites elements substantially similar to claim 1, and is submitted to be patentable over the Mordehao and Kobelco references for substantially the same reasons

advanced above in connection with claim 1. More specifically, claim 20 is directed to a system for analyzing ions including a skimmer having a body wholly fabricated from titanium metal. As discussed above, the Mordehai and Kobelco references, taken either individually or in combination, fail to teach or suggest a skimmer body wholly fabricated from titanium metal. Withdrawal of the §103(a) rejection of claim 20 is thus believed to be in order.

Claims 21-25 depend directly from claim 20 and inherit all the limitations thereof, and are submitted to be patentable over Mordehai in view of Kobelco for at least the reasons advanced above in connection with Claim 20.

In view of the above, it is submitted that the Application is now in condition for allowance and such favorable action is respectfully requested. The Examiner is invited to contact the Applicant's undersigned representative if he believes that a telephone interview will be useful to advance prosecution of the Application.

The Commissioner is hereby authorized to charge any appropriate fees under 37 C.F.R. §§1.16, 1.17, and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 50-3267.

Dated: 8/25/05

Thermo Electron Corporation
ATTN: IP Department
355 River Oaks Parkway
San Jose, California 95134
Tel: (408) 965-6000
Fax: (408) 965-6010

Respectfully submitted,

By: S. Upham
Sharon Upham
Reg. No. 43,357